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Further Investigations of the Richtmyer-Meshkov Instability[1] L.M. LOGORY, P.L. MILLER, T,.A. PEYSER, D.R. FARLEY, P.E. STRY, E.W. BURKE, Lawrence Livermore National Laboratory – We report on further investigations of the Richtmyer-Meshkov instability from an initially nonlinear perturbation. The experiments are conducted on the Nova laser, and use a Nova hohlraum as a driver source for a strong shock in a miniature shock tube attached to the hohlraum. The shock tube contains brominated plastic and low-density carbon foam as the two working fluids, with a micro-machined sawtooth interface between them serving as the perturbation. The shock, upon crossing the interface, instigates the Richtmyer-Meshkov instability from the perturbation. The resulting growth of the mixing layer is diagnosed radiographically. We have previously reported upon results from a single amplitude and wavelength of perturbation[2]. A new study of the effect of variations in amplitude and wavelength on the nonlinear growth of the instability will be discussed. The experiments were simulated using CALE, a two-dimensional arbitrary Lagrangian-Eulerian hydrodynamics code. Data from both experiment and simulation suggest that the nonlinear growth of the mix width has a logarithmic time dependence. Logarithmic behavior is in agreement with two-phase flow models, and a large variety of theoretical and numerical efforts.

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[2] T.A Peyser *et al., Phys. Rev. Lett.* **75, 2332 (1996).**

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